SYLLABUS

DEGREE OF BACHELOR OF ARCHITECTURE

UNIVERSITY OF MUMBAI

THIRD YEAR ARCHITECTURE

3.1 ARCHITECTURAL DESIGN - III

Teaching Hours

Lecture	**:**	**-----**
Studio	**:**	**256 periods of 45 mins. each. (192 Hours)**

Sessional Marks

Internal	**:**	**200**
External	**:**	**400**

Examination Scheme

Duration	**:**	**-----**
Marks Max.	**:**	**-----**
Marks Min.	**:**	**-----**

STAGE I

Scope of design considering :

Method of construction, materials, building services and theory of structures studies during Semester 1st and 2nd year.
Data collection and analysis.
Climatic conditions.
Socio-economic conditions.
Basic need of the present living in rural areas.

Design problem considering the above dealing with small rural development schemes.

STAGE II

Scope of design considering :

Method of construction, materials, building services and theory of structures studies during Semester 1st and 2nd year.
Data collection and analysis.
Site conditions, climatic conditions.
Socio-economic conditions.
Users requirements.
Communication.
Transportation.

Design problem considering the above dealing with planning for masses for multiple activities such as Departmental Stores, markets, drama, theatres, cinemas, etc.

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3.2 THEORY AND DESIGN OF STRUCTURES II

Teaching Hours

Lecture	**:**	**128 periods of 45 mins. each. (96 Hours)**
Studio	**:**	**-----**

Sessional Marks

Internal	**:**	**50**
External	**:**	**-----**

Examination Scheme

Duration	**:**	**3 Hours**
Marks Max.	**:**	**100**
Marks Min.	**:**	**50**

OBJECTIVES :

- Understanding concrete structures
- Understanding steel structures
- Understanding structural drawings
- Understanding structural planning

1. R. C. C. STRUCTURES :

- Concrete technology : Types of cements, fine and coarse aggregates, water cement ratio, form work centering, mild and tor steel reinforcement bending and fixing, placing of concrete and methods of compacting of concrete, expansions and construction joints in concrete, durability of concrete with respect to honeycomb free, cold joint, role of admixtures in concrete.
  (Visit to construction sites to study concrete technology)
- Introduction to pre-cast concrete.
- R. C. C. Theory : Limit State Method
- R. C. C. Footing, Column beam and slab design, R. C. C. Staircase
- Application of thumb rules for beams, columns, Slabs for fixing sectional properties
- Use of code of special practice for R. C. C. members (Indian Standards)
- Design and Detailing of a simple G + 1 structure.

2. STEEL STRUCTURES :

- Understanding types of joints in steel structures, riveted, welded and bolted joints.
- Types of steel sections and their properties
- Criteria for selection of steel sections for design.
- Design and Detailing of a factory shed in steel structure.
- Visit to steel structure fabrication site.

SESSIONAL WORK :

- Preparing structural drawings of a simple RCC and steel structure as mentioned above.
- Visits to construction sites to study RCC structures and steel fabrication work and preparing report.

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3.3 ARCHITECTURAL BUILDING CONSTRUCTION - III

Teaching Hours

Lecture	**:**	**64 periods of 45 mins. each. (48 Hours)**
Studio	**:**	**128 periods of 45 mins. each. (96 Hours)**

Sessional Marks

Internal	**:**	**100**
External	**:**	**100**

Examination Scheme

Duration	**:**	**3 Hours**
Marks Max.	**:**	**100**
Marks Min.	**:**	**50**

Advanced Doors and Windows – Heavy panelled and moulded doors in timber, fully glazed sliding folding doors and windows and bay windows, rolling shutters.

Curtain Walls – Curtain walls in glass, aluminum, precast concrete units etc. for buildings like laboratories, offices, cinemas etc.

R. C. C. Construction - Frame construction, advantages over load bearing construction, study of column grid, detailing of R. C. C. work with reinforcement for slabs, beams, columns, footing, staircases (ordinary and spiral).

Sessional Work based upon above topics.

Decorative Wall Finishing and Treatment – Stone facing of various types (stone, marble, granite slab etc.) for walls, decorative patterns in brick, stone for wall treatment, wall lining in soft board timber etc. for offices.

Structural Steel Construction – Detailing of structural steel with connections for beams, stanchions, grillage footings, stairways, plate girders, trusses of various types including those for North Light Factories, verendeel girders, castelleted beams.

Patent Glazing - Patent glazing for skylights, lanterns, north light trusses etc.

Floor and Roof Finishes - Timber Boarded and parquette Floors for gymnasia and dance halls, Tarfelt water proofing for roofing.

Sessional Work based upon above topics.

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3.4 HISTORY OF ARCHITECTURE - II

Teaching Hours

Lecture	**:**	**96 periods of 45 mins. each. (72 Hours)**
Studio	**:**	**------**

Sessional Marks

Internal	**:**	**50**
External	**:**	**------**

Examination Scheme

Duration	**:**	**3 Hours**
Marks Max.	**:**	**100**
Marks Min.	**:**	**50**

STAGE I

Study of Indian Architecture, its gradual growth from Indus Valley civilization under various influence and as foreign invasions , geographic, political religious, climatic conditions, etc with regard to –

1. Indus Valley Civilization
2. Vedic or Early Aryan Architecture in India.
3. Buddhist Architecture.
4. Indo-Aryan (hindu) Architecture.
5. Chalukyan Architecture in Central and South central part in India.
6. Dravidian Architecture.
7. Jain Architecture.
8. Domestic Architecture in India in historic time.

Sessional work of 25 marks shall be assessed by the Jury of External examiners one example from each of the above topics shall be selected and the candidate shall submit informative notes with neat sketches.

STAGE II

1. Rise of Islam

2. Islamic Invasions, political and social conditions in the country

3. Study of the Islamic Architecture, regions and stylewise under local influence with regard to –

- Kutub or slave dynasty and imperial style or Pathan style at Delhi.
- Jaunpur Style.
- Malwa or Mandu style.
- Different styles at Deccan – a) Gulbarga, b) Bidar, c) Golkonda, d)Bijapur.
- Mughal Architecture.
- Gujrat Architecture.
- British Colonial Architecture.

Sessional work of 25 marks shall be assessed by the Jury External examiners one example from each of the above topics shall be selected and the candidates shall sub informative notes with neat sketches.

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3.5 BUILDING SERVICES - 1

Teaching Hours

Lecture	**:**	**64 periods of 45 mins. each (48Hours)**
Studio	**:**	**64 periods of 45 mins. each (48Hours)**

Sessional Marks

Internal	**:**	**100**
External	**:**	**-----**

Examination Scheme

Duration	**:**	**3 Hours**
Marks Max.	**:**	**100**
Marks Min.	**:**	**50**

OBJECTIVES :

- Introduction to fundamentals of all types of services required in a building.
- Learning about various equipment and fittings available in the market.
- Preparing basic design layout of various services and typical details.

WATER SUPPLY, DRAINAGE AND SANITATION :

- Pipes and fittings, materials, size and classification.
- Different types of taps, toilet and kitchen fittings.
- Connection of lines to fittings.
- Under ground, overhead and internal storage tanks and supply lines.
- Pumping mechanisms.
- Design layout of water supply for a residence and apartment block, and calculation of supply requirements based on standards.
- Introduction to sanitation and its importance.
- Planning and layout of sanitary fittings in residences.
- Drainage system for residences.
- Waste water drainage-traps of various types details and use.
- Rain water disposal and roof drain.
- Sewers details of construction , inspection chambers, trap chambers.
- Septic tanks.

ELECTRICAL SERVICES :

- General distribution of electric power in towns and cities.
- Electrical wiring system – different materials employed and methods of wiring.
- Different electrical gadgets and fittings.
- Switch board, distribution board, mains, fuse, meter, circuit breaker etc.
- Single phase and Three phase distribution and circuits.
- Basic electrical layout for a residence.
- Earthing for electricity appliances.
- Electrical installations for services such as air-conditioning systems, lifts, escalators, pumps etc.
- Artificial lighting , design principles, illumination levels.
- Types of lamps and fittings used.
- Application of lighting system for shops, showrooms, offices, lecture halls, class rooms, stage, auditoriums etc.

SESSIONAL WORK :

- Application of above studies in preparing design layout and details, in the design done in current term.

NOTE : Question Papers to be set in two sections.
Section I and Section II.

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3.6 QUANTITY SURVEYING - 1

Teaching Hours

Lecture	**:**	**64 periods of 45 mins. each (48Hours)**
Studio	**:**	**------**

Sessional Marks

Internal	**:**	**100**
External	**:**	**-----**

Examination Scheme

Duration	**:**	**------**
Marks Max.	**:**	**------**
Marks Min.	**:**	**------**

Quantity Surveying and Estimating

Introduction :- Definition, Aim and object, Scope and importance of subject.

Types of Estimates - Approximate and detailed.

Methods of Approximate Estimating - Built up or Carpet Area Method, Cubic Contents, Method and Numbers System, Current rates in Mumbai for Approximate Estimating.

Detailed Estimate on item rate basis - Quantities and Abstract of Estimate, Bill of Quantities of a Tender, Contingencies.

Rates for Civil Work items – as per Municipal or P. W. D. Schedule Rates and Current market rates in Mumbai, Units for rates.

Taking of Quantities for Civil Work of Load Bearing Wall structure and preparation of Abstract.

Taking of Quantities of Civil Works of R. C. C. Frame Building, and preparation of Abstract.

Sessional work based upon above topics.

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3.7 SPECIFICATIONS - I

Teaching Hours

Lecture	**:**	**64 periods of 45 mins. each (48Hours)**
Studio	**:**	**-----**

Sessional Marks

Internal	**:**	**100**
External	**:**	**-----**

Examination Scheme

Duration	**:**	**3 Hours**
Marks Max.	**:**	**100**
Marks Min.	**:**	**50**

INTRODUCTION TO SPECIFICATION

Importance of specification in the building activities

Method of drafting specification with importance to the correct order and sequence. avoid duplication and ambiguity, specification by negation and affirmation.

Use of Indian standard specification and PWD handbook, for reference only specifications affecting cost.

SPECIFICATION FORMING PART OF BUILDING CONTRACT :

Method of specification writing :
a. Tradewise practice
b. Item of completed works

Establishment for project and their insistence for compliance with specification with reference to contract document.

Specification for handing over the site.

Standard clauses/ instructions for various items of work for the contractor, owner Architect, sub- contractor, Explanation of extra items, their necessity and other items created for change of specifications.

SPECIFICATION FOR A STRUCTURE FROM EXCAVATION UP TO FINISHING IN SUPERSTRUCTURE.

Excavation, filling, timbering, dewatering, trenches, etc.

Specification for basic building material required such as bricks, stones, lime, cement, sand etc. including quality, storage, transportation, handling as per Indian Standard Specification as guidelines for minimum standards of specification.

Specification for concrete works including mixing, transportation, placing and curing of concrete, structure, scaffolding required for R. C. C. works.

Masonry in brick and stone both load bearing and paneled walls and ashlar and khandki. General rendering and plaster work and steel.

Painting on old and new surfaces in masonry, wood work and steel.

Flooring cast and situ including I. P. S., flooring in natural stones such as kota, marble etc. manufacturing for floor finish such as agglomerated marble / granite / tiles / ceramic tiles etc.

MATERIAL SPECIFICATION
TIMBER AND ITS PRODUCTS

Selection of materials with their trade names, manufacturer's specifications of allied products such as block board, plywood, soft board etc.

METAL :

Study of limitations of metal such as aluminum, steel etc.

Identifying a section by their weight, gauge etc.

WATER PROFFING :

In toilets, on terraces, in water tanks.

SPECIFICATION FOR MATERIALS USED IN ROOFING AND ROOF COVERING :

A. C. sheet, G. I. sheet with method of fixing and finishing at gutter, valleys

Note : Recommended study of all the above with reference to trade names, manufacturer's specifications and Indian Standard Specifications.

APPLICATION OF ALL ABOVE KNOWLEDGE IN DRAFTING SPECIFICATION FOR SUCH WORK AS

Load bearing structure

R. C. C. frame structure

Steel frame structure

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3.8 WORKING DRAWING - 1

Teaching Hours

Lecture	**:**	**-----**
Studio	**:**	**128 periods of 45 mins. each (96 Hours)**

Sessional Marks

Internal	**:**	**100**
External	**:**	**100**

Examination Scheme

Duration	**:**	**-----**
Marks Max.	**:**	**-----**
Marks Min.	**:**	**-----**

STAGE I

Working Drawing of Load Bearing Wall Structure for Design Problem done during 2nd year, indicating to appropriate scale :

(1) Foundation Plan
(2) Working Floor Plan
(3) Necessary Section.

STAGE II

Working Drawing of Design Problem done during 2nd year, indicating to appropriate scale :

(1) Working Elevations

(2) Working Details.

SESSIONAL WORK

To be started after Part –A is completed in theory classes.

- Related to Architectural Design (other than industrial)
- Landscape design of a neighbourhood open space (area of 2000 to 3000 sq. metres)

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3.9 HUMANITIES - III

Teaching Hours

Lecture	**:**	**64 periods of 45 mins. each (48 Hours)**
Studio	**:**	**-----**

Sessional Marks

Internal	**:**	**50**
External	**:**	**-----**

Examination Scheme

Duration	**:**	**-----**
Marks Max.	**:**	**-----**
Marks Min.	**:**	**-----**

- Urbanization at global level and in India.
- Pace of urbanization.
- Problem arising out of rapid urbanization in developing and developed countries
- Major trends urbanization takes in India.
- Genesis of Urbanization.
- Urban population growth due to natural increase of migration in to urban areas, Nature of problems of urban migration.
- Contemporary problems faced by Mumbai –
  Work patterns organized v/s unorganized labour in Mumbai.
  Public Health problems in Mumbai.
  Public Transport Problems in Mumbai
  Public Housing Problems in Mumbai.

- Introduction to the Economics of the building Industry including Study of Factors of land, Labour capital, Changing Technologies and Management in the production of Architecture.

SESSIONAL WORK BASED UPON ABOVE TOPICS.

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3.10 LANDSCAPE - 1

Teaching Hours

Lecture	**:**	**64 periods of 45 mins. each (48 Hours)**
Studio	**:**	**96 periods of 45 mins. each (72 Hours)**

Sessional Marks

Internal	**:**	**100**
External	**:**	**-----**

Examination Scheme

Duration	**:**	**3 Hrs.**
Marks Max.	**:**	**100**
Marks Min.	**:**	**50**

PART – A

- Introduction to landscape Architecture
- Designing and execution of proposal :
  a) Analysis of site
  b) Identification of functional requirements
  c) Site development by exploiting mutual forms
  d) Hard Surface – materials
  e) Elements in Landscape design – lawn
     Hedges and Shrubs
     Trees Annuals & Seasonals
     Rockeries

  f) field identification of minimum 20 common Indian trees and 25 common Indian shrubs

PART – B

- History of landscape Architecture
  a) Moghul
  b) Renaissance
  c) 18th century – Brownian
  d) 19th century – Botanical gardens
  e) Japanese landscape

- 20th century urban landscape
  a) Roof gardens
  b) Atriums
  c) Road side plantation, avenues

d) Indoor landscape (general)

- Children's Play Area
  a) dwelling level
  b) Neighbourhood level

- Concept and use of national Parks

SESSIONAL WORK

To be started after PART 'A' is completed in theory classes.

- Related to Architectural design (other than industrial)
- Landscape design of a neighborhood open space (area of 2000 to 3000 sq. metres)

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